

(12) UK Patent Application (19) GB (11) 2 111 410 A

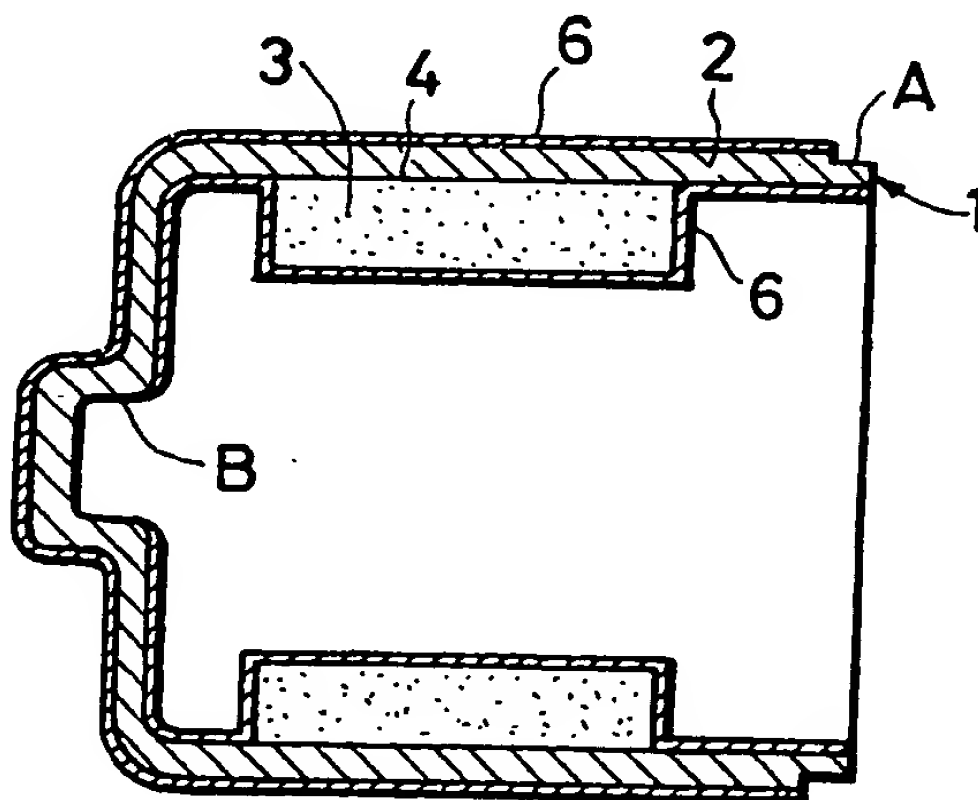
(21) Application No 8235286
(22) Date of filing 10 Dec 1982
(30) Priority data
(31) 56/199634
(32) 10 Dec 1981
(33) Japan (JP)
(43) Application published
6 Jul 1983
(51) INT CL³
H02K 15/00
(52) Domestic classification
B3A 44
H2A CH
(56) Documents cited
None
(58) Field of search
B3A
(71) Applicant
Mitsubishi Denki
Kabushiki Kaisha
(Japan),
No. 2—3 Marunouchi 2-
chome, Chiyoda-ku,
Tokyo, Japan
(72) Inventor
Isao Hamano
(74) Agent and/or Address for
Service
Marks and Clerk,
Alpha Tower, Suffolk
Street, Queensway,
Birmingham B1 1TT

(54) Yoke assembly manufacturing method

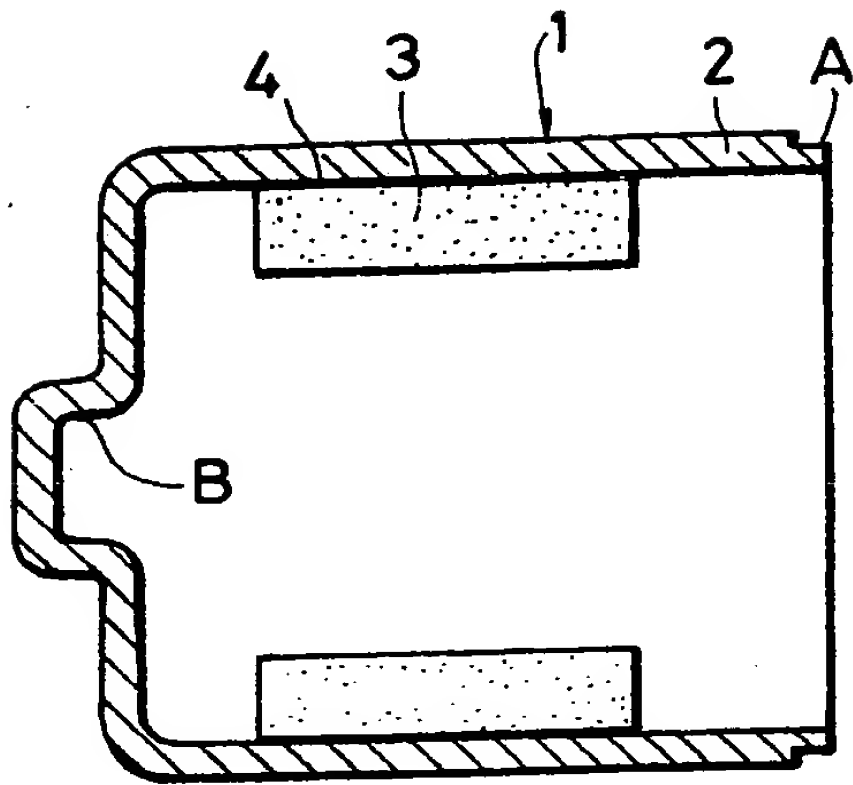
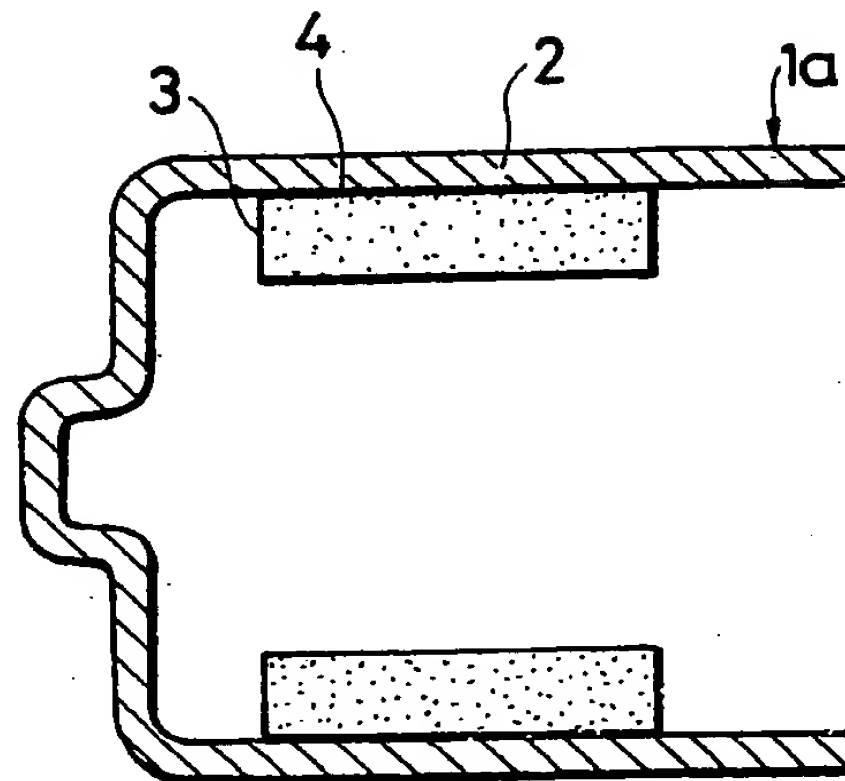
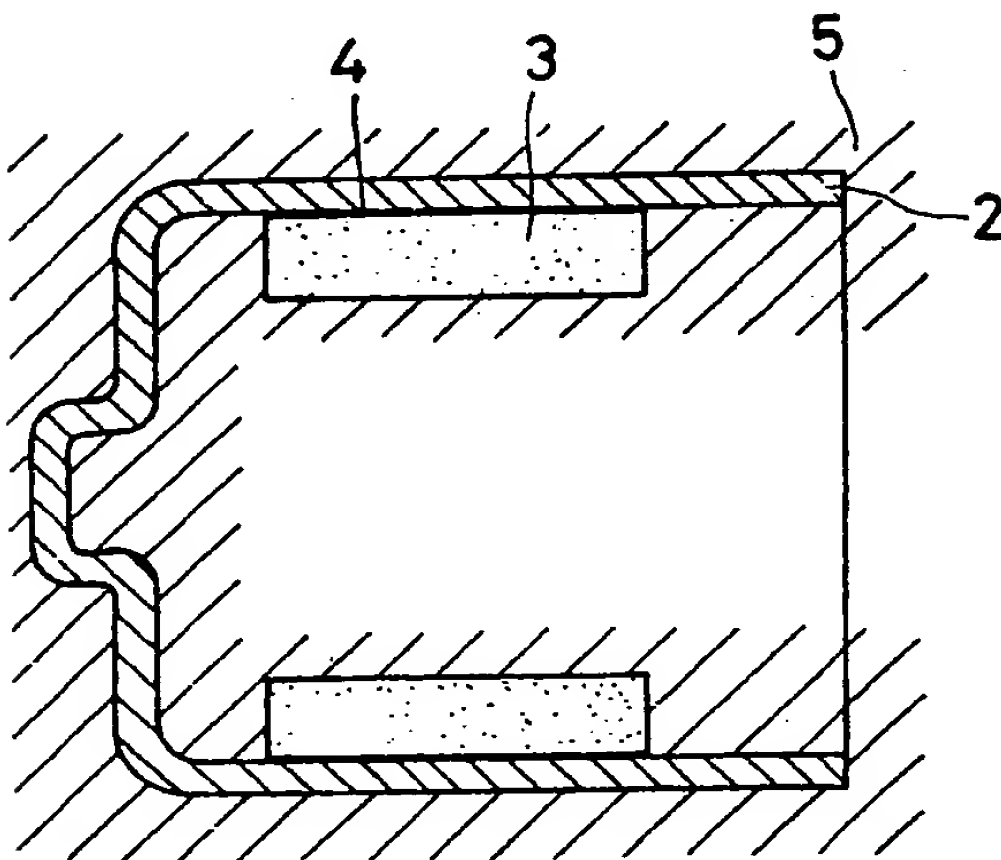
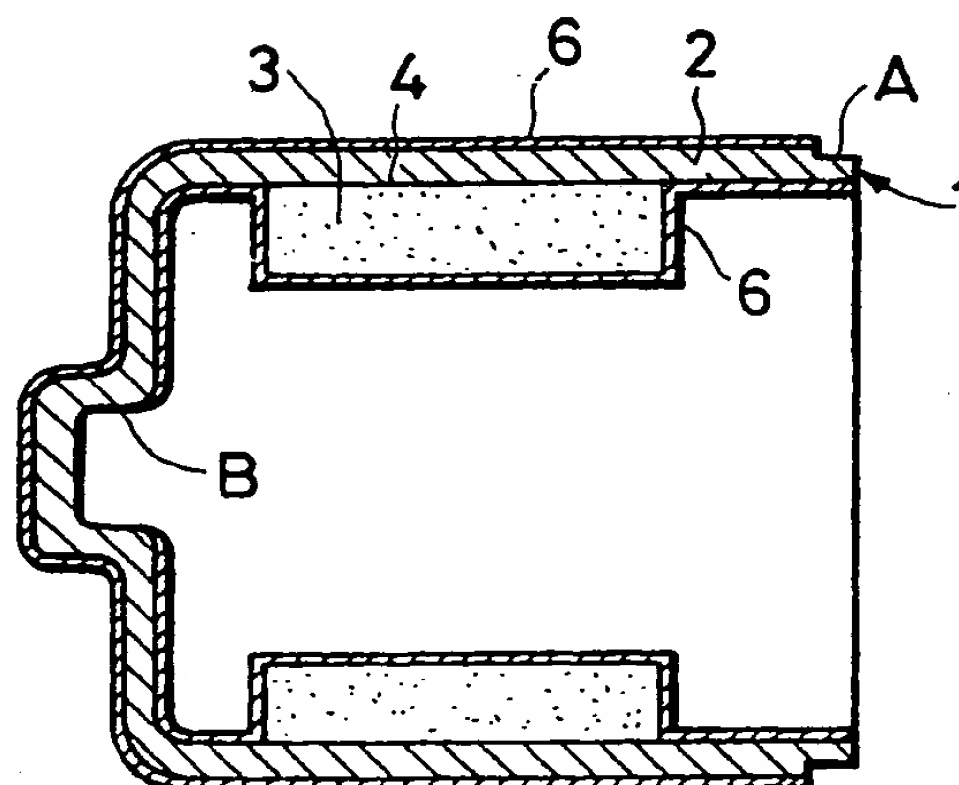
(57) A method of manufacturing a yoke assembly is disclosed in which a yoke 2 is formed by drawing a soft steel plate and permanent magnet poles 3 are bonded to the yoke. The

resulting assembly is then coated with a film 6 of coating material to protect the yoke from corrosion and prevent moisture from reaching the bonding adhesive 4. Machining is then carried out to form bearing fitting and fitting surfaces B,A.

FIG. 4



GB 2 111 410 A

FIG. 1**FIG. 2****FIG. 3****FIG. 4**

SPECIFICATION

Yoke assembly manufacturing method

Background of the Invention

This invention relates to an improved method of manufacturing a yoke assembly for use in a permanent magnet type DC motor or the like.

A conventional method of manufacturing a yoke assembly of this type will be described with reference to Fig. 1. In Fig. 1, reference numeral 1 designates a yoke assembly; and 2, the cylindrical yoke of the yoke assembly 1. The yoke 2 is formed as follows: After the surface of a soft steel plate which has been subjected to deep drawing is treated by color zinc plating, a fitting part A and a bearing member fitting part B, which are necessary for the field system, are formed by machining. Further in Fig. 1, reference numeral 3 designates magnetic poles made up of ferrite permanent magnets. The magnetic poles 3 are fixedly secured to predetermined portions of the inner wall of the yoke 2 with an adhesive 4, the yoke having been plated and machined as described above.

The conventional yoke assembly of the permanent magnetic type DC motor, manufactured as described above, and especially those in which the magnetic poles 3 made up of ferrite permanent magnets are bonded to the zinc-plated surface of the yoke 2 with epoxy resin adhesive, suffer from the following drawback: Water permeates into the porous interior of the ferrite permanent magnet, to reach the adhesive surface, and there causes a chemical reaction, whereby the adhesive strength between the yoke 2 and the magnetic poles 3 is extremely diminished.

Summary of the Invention

Accordingly, an object of this invention is to provide a yoke assembly manufacturing method in which, after a film coating is formed over the entire surface of a primary product fabricated by bonding magnetic poles to a yoke, a fitting part and a bearing member fitting which are necessary for the yoke assembly are formed by machining, whereby the above-described drawback is eliminated. The manufactured yoke assembly has an excellent anticorrosion characteristic even though the yoke is not plated.

Brief Description of the Drawings

Fig. 1 is a sectional side view of a yoke assembly fabricated according to a conventional manufacturing method; Figs. 2 and 3 are sectional side views showing steps of a method of manufacturing a yoke assembly according to one embodiment of this invention; and Fig. 4 is a sectional side view showing a yoke assembly fabricated according to the manufacturing method of the invention.

Detailed Description of the Preferred Embodiments

One embodiment of this invention will now be described with reference to Figs. 2, 3 and 4. A cylindrical yoke 2 having the required configuration is fabricated by subjecting a soft steel plate to deep drawing. Magnetic poles 3 made up of ferrite permanent magnets are fixedly secured to predetermined portions of the inner wall of the yoke 2 with epoxy resin adhesive 4, to provide a partially completed yoke assembly 1a (hereinafter referred to as "the primary product"). Next, a coated film 6 (cf. Fig. 4) is formed over the entire surface, including the inner and outer walls, of the primary products 1a of Fig. 2 by spraying a coating solution 5 thereonto or by immersing the primary product 1a in coating solution, as shown in Fig. 3. Thereafter, a fitting part A and a bearing member fitting B, which are necessary for the field system, are formed as shown in Fig. 4, whereby a complete yoke assembly 1 is obtained.

In the yoke assembly manufactured according to the method of this invention, the film 6 prevents water from reaching the adhesive between the yoke 2 and the magnetic poles 3, and accordingly prevents the difficulty of a decayed adhesive allowing the magnetic poles 3 to come off of the yoke 2. As substantially the entire yoke assembly is coated with the film 6, the yoke assembly is thus protected from corrosion.

In the above-described embodiment, magnetic poles made up of ferrite permanent magnets are bonded to a yoke formed of a soft steel plate. However, according to the invention, the yoke and the magnetic poles may be made of other materials. Furthermore, in the above-described embodiment, the coated film 6 is formed by use of a coating solution; however, the coated film may be formed using painting materials such as coating powders, other than liquid-phase painting material.

As is clear from the above description, the yoke assembly according to the invention is formed according to a method in which a coating film is formed over the entire surface of a primary product produced by bonding magnetic poles of a yoke, and then a fitting part and a bearing member fitting are formed by machining. Therefore, it is unnecessary to plate the yoke, and the yoke assembly according to the invention has an excellent anticorrosion characteristic and can be manufactured at a relatively low cost.

CLAIMS

1. A yoke assembly manufacturing method, comprising;
 - bonding magnetic poles to the yoke, forming a coated film over the surface of the yoke, including said bonded magnetic poles, and machining a fitting part and a bearing member fitting necessary for said yoke assembly.
2. A method as claimed in claim 1, wherein said

magnetic poles are adhesively bonded to said yoke, and said coated film prevents moisture from reaching the adhesive.

3. A method as claimed in claim 1, wherein said
5 coated film is formed over the entire surface of said yoke by spraying.

4. A method as claimed in claim 1, wherein said coated film is formed over the entire surface of said yoke by dipping.

10 5. A method as claimed in claim 1, wherein said yoke is formed by deep drawing a soft steel plate, and said coated film is applied directly to said yoke, said coated film forming an anti-corrosive layer over said yoke.

15 6. A method as claimed in claim 1, wherein said machining operation removes said coated film only from surfaces substantially spaced from said magnetic poles.